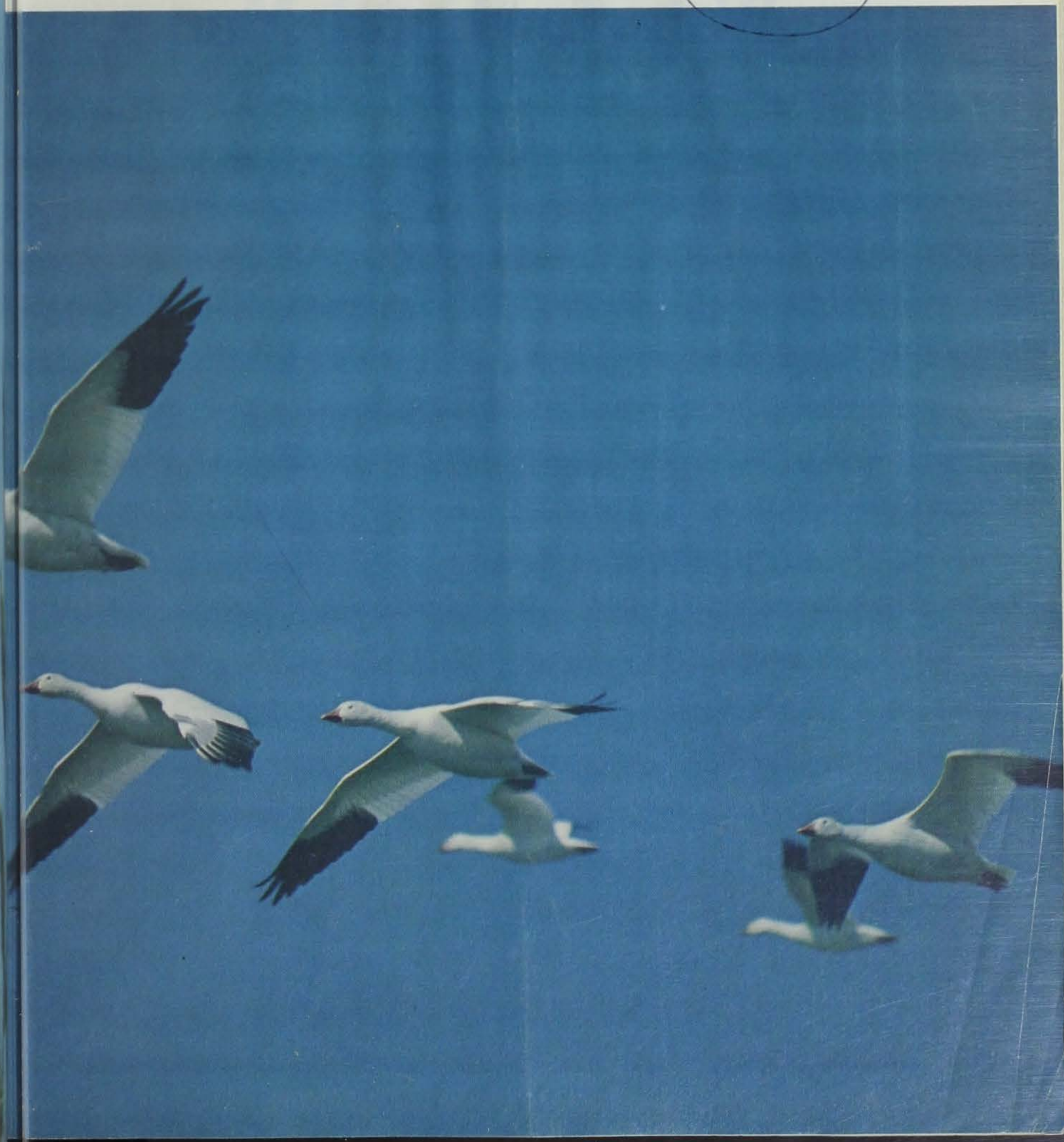
Iowa conservationist

OCTOBER 1977



Cover Story

Cover Photo by Ken Formanek

Waterfowl and Men

by Dennis Pluimer

A HUNTER AND CITIZEN OF IOWA

Photo by Ken Formanek

I BELIEVE it could be said that my life is measured by Octobers and Novembers; the other months are imply superfluous, being sandwiched in etween. Since I live these two months to he fullest, it can truthfully be said that here is no such thing as a dark, dull, dreary October or November day.

For ten months, life will proceed normally. I will follow a routine and will ccupy myself with the matters at hand, nd will even enjoy each of these days. But hen, suddenly, without any warning, xcept for maybe a faint hint of woodmoke in the air one morning, or a fleeting limpse of a single leaf which is more range than green, it will happen. A omfortable night's sleep in a cozy bed will uddenly be shattered as the faint bugling f geese seeps through my bedroom vindow. The waterfowl are on the move gain! All of a sudden, life assumes a more rgent attitude. For the next two months, lmost all earthly matters will be relegated o roles of secondary importance, as my yes and ears will now subconsciously be ilted skyward in anticipation of glimpsing what I know is taking place up there.

Nothing heralds the fall quite so much as lucks and geese migrating. October itself eeds nothing; its brilliant days, clean ights, and flaming trees are credentials nough. But when October skies become ipped by jagged lines of geese and ducks, he month becomes an experience of ranscendental quality.

Just what it is about waterfowl that captivates me so completely, I do not know. Maybe it is because, twice a year, hey usher in new seasons as they wing their way between wintering and breeding grounds. Perhaps it is an unexpressed urge o accompany them as they "barnstorm" rom marsh to marsh. On the other hand, I eel it is because after having observed hem sliding and slipping through the fog ver my duckblinds for 15 years, I simply annot exist without them.

Whatever the reason, ducks and geese fill ny mind as I anticipate the biggest event of he year—Opening Day. The rubber chest waders have been faithfully patched; the hotgun has been carefully polished over nd over; and the worn decoys have been lutifully re-painted. The morning will inally arrive, like so many previous pening mornings, and in the pitch larkness I will leave the car and nervously lon waders and the familiar hunting acket.

Standing in this swamp right now, it ccurs to me that there is no other place on arth I would rather be at this moment. As I slowly slosh through the mud and water, I eel like a long-lost son returning home. The night breeze carries the dry smell of eeds and rushes, and an occasional whiff of swamp gas which has oozed up from the muddy bottom. The full vest of #4 shells tugs pleasantly at my shoulders, and the Browning in the crook of my left arm feels as though it has always belonged there. With each hesitating step through the cold water, there is the sound of hollow wood against wood as my two duck calls knock against each other, swinging freely from my neck. I realize that my continual shivering is not related to the temperature, and it is only intensified as the minutes tick away and the first pink in the East becomes visible. Way "out in front" I can hear the contented babbling of feeding ducks, accentuated occasionally by the loud, scratchy quacking of a jealous hen mallard.

Overhead there is the whistling of wings and twisting forms seem to hurtle through the semi-dark. On opening morning they always move faster. The eastern pink is now diffusing farther and the hurtling forms are no longer in my imagination. They are real and are discernable—green-winged teal, blue-winged teal, mallard, widgeon, wood-duck—each flying in its own distinctive flight pattern—patterns immediately recognized only by veteran duck hunters and which, I must confess, often still confuse me.

Suddenly it seems so ironic; here I am, transfixed and utterly captivated by the spectacle around me. I have never witnessed anything more beautiful than a drake wood-duck dropping from the skies to alight among the decoys. I have seen nothing more majestic than a greater Canada goose rising through the early morning mist over a pond; and to me, very little is as important as being there to experience it all. And yet, in a few short minutes, I will leap to my feet, will confidently swing my shotgun at a passing duck, and without apology, will try to center it cleanly with a load of #4 shot. At the same time, I realize that there are thousands of people who will never set foot in a marsh, who during an entire season will not even once experience the sight of a wild duck or goose winging through the sky, who actually never hear the plaintive yapping cries above their bedrooms on a fall night. To these people, ducks and geese are obviously unimportant; yet these same people will be among the self-styled "preservationists" who will decry my position, maintaining that "their" precious wildlife must be preserved. I do not understand.

But this I do understand—ducks are a part of me, and I a part of them. Part of me goes with them as they fly from marsh to marsh. If the bugling of night-time geese, or the glimpse of a flock of mallards cutting through a sunset triggers that indescribable primeval longing within you also, then may our autumns always be filled with ducks.

iowa conservationist

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All persons are entitled to full and equal enjoyment of the recreational opportunities, privileges and advantages available in Iowa's great outdoors.

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ODESSA!

by Art Roseland
WILDLIFE MANAGEMENT BIOLOGIST

BLACKHAWK, Port Louisa, the Airline, 1673, Burris City, feather boats and Poweshiek! What do they have in common? If your mind is blank, don't despair. Only a few River buffs, Louisa County historians and others will recognize these as being parts of the colorful and interesting history of an area called Odessa.

Maps show Odessa as a 6,000 acre "in-between land" of shallow water and marsh, laced with wooded islands and framed with timbered bluff, the Iowa and Mississippi Rivers. Located in southeast Iowa's Louisa County, Odessa was indeed a part of the Mississippi and its lowland corridor, only today fractured from the Great River by a high ribbon of sandy levee.

For Iowans of today, it is known as Odessa Wildlife Management Area. For native Americans of centuries past it was home. For a thousand generations of as many species of wild organisms from deer to pinoak to mossbacked turtles it was also a home and still is.

The native Americans who last lived on this land were friends, relatives and neighbors of such legendary Indians as Keokuk, Wapello and Poweshiek. From 1734 to 1795, the territory from the mouth of the Iowa River north to what is now Muscatine, and including Odessa, was a favorite hunting and fishing grounds for the Iowa, Illinois, Sac and Fox tribes.

Earlier, the area was equally attractive as evidenced by mound groups which still overlook Odessa from the blufftops. Many artifacts have been gleaned from the soil and thousands are still buried. Toolsboro Mounds, a Registered National Historic Monument, today reminds area visitors and residents, of this lands' Indian heritage.

Mississippi River Indians met with western civilization on the Odessa bluffs June 25, 1673. On that date, Marquette, Joliet and their small contingent struck the mouth of the Iowa River and, in Marquette's own words, *"we silently followed the narrow path, and after walking about two leagues, we discovered a village on the bank of a River, and two others on a hill distant about a league from the first."* This location is believed at or near the Town of Toolsboro, formerly called Blackhawk.

For 162 years following that historic meeting, wildlife of Odessa lived as it had evolved, responsive to natural habitat change, or no change, populations rising, falling or remaining static. Each year receding flood waters laid bare fresh deposits of silt. As shorebirds watched, new plant growth blanketed these shallows, as cover and food for another generation of wildfowl emerged. As the River lay quietly in its deepest bed, pecans, hickories and oak drew life from the not so wet soils of summer to later carpet the ground with mast. River birch and willow often grew alone on moist sites, tolerant of the wet soils. Otter, beaver and fish shared the waters, fox and bear the land, and eagles claimed the sky.

1835 began a new era in Odessa history, the environment and its wildlife were not to be the same again. In thirty years following that first white settler, five towns put their name on a plat. Just south of the present-day Odessa outlet structure, Burris City went up in 1855 with a drug store, blacksmith's shop, sawmill, carpentry, warehouse and hotel. Burris City died in 1858, some say a victim of unrealized hopes of the Airline Railroad, but more certainly at the hands of Old Man Mississippi who struck with high, muddy water laced with typhoid. Tall timber today shades the soil that supported the old town. White-tails and nesting wood ducks neither know nor care of Burris City, but a few would-be treasure hunters still talk of the thick marble floor in the Hotel.

The soils that supported Burris City had other uses, and other users. The fertile black soils and sandy loams filtered and fertilized by a thousand floods, could grow more than wilderness and wildlife. Exports from Port Louisa in 1856 give a clue with wheat, oats, rye, corn, potatoes, flax and mustard seed, pork, meat and lard on the ledger. Cropland replaced wilderness, and crops wildlife, but the River often had its way, and progress was slow.

The desired "taming" of the Mississippi, or at least controlling to a degree, began in 1913 with formation of a joint drainage and levee district and construction of the first levees. By 1920 a pumping plant was operating on Blackhawk slough to remove water, but by 1930 it had pumped its last. Levee repairs and pumping costs were too high. A nine-foot channel project on the River was also being developed which could raise the water table even higher.

The River controlled land use on Odessa but the wilderness was gone forever. Higher land of the old islands was farmed when possible, abandoned when not. Most bottomland timber, even on the wet sites, had been cut over and cattle grazed where deer and turkey foraged a century before. Withstanding all the loss of wildlife habitat, were the remaining wetlands, too low to ever hope of economical draining, and so the ducks continued to come.

Odessa was not a singular example of sweeping changes of the River systems. 1939 saw work completed on Lock and Dam 17 adjacent to Odessa and the Mississippi was no longer a free-flowing River. As the gates closed, the River raised within its man-made banks. Lowlands disappeared and Pool 17 emerged. A nine-foot channel for transportation of goods was a reality.

The nine-foot channel project would affect Odessa, and its wildlife, more than any one thing since white settlement. On May 1, 1940, the U.S. government completed acquisition of more than 6,000 acres of bottomland. These were a part of the navigation project's "General Plan Lands," or those land and water areas either absorbed or greatly altered by the nine-foot project.

For many years, waterfowling and other outdoor pursuits had attracted area residents to the Odessa bottoms. Such sport hunting traditions are old and treasured and historically have melded with the best interests of wildlife species. So it was on Odessa.

As soon as the area was brought into public ownership, there was a grassroots movement for public recognition of the unique value and potential Odessa held for fish and wildlife. Proposals from interested sportsmen, the Izaac Walton League and others did not fall on deaf ears. In following years many acres of the "General Plan Lands" on the Upper Mississippi were to be recognized as immensely important to the welfare of wildlife species, especially waterfowl. Odessa held a special management potential for wildlife and so the Iowa Conservation Commission was also very interested in the area. In 1946, the Commission obtained its first license on portions of the area. In 1954, the water inlet structure from Pool 17 of the Mississippi and an outlet structure into Pool 18 were completed by the Conservation Commission using wildlife funds. Refuge areas on the "bottoms" were officially recognized as the Louisa Division of the Mark Twain National Wildlife Refuge in 1958.

For wildlife and its habitat, what did the future hold? Changes occurred rapidly. Growing trees quickly invaded the old pasture areas. Water level control became a reality, except during high River stages, and meant that spring and fall migrants would be assured of water refuge with food and cover. Some of the old crop areas reverted to wetlands or bottomland timber, or were farmed with wildlife needs given priority over bushels per acre production. Wildlife responded.

Waterfowl filtered through the flyway and sought the improved wetlands in increasing numbers. Especially the mallards came, by the tens or hundreds of thousands, to feed on grain, smartweed, sedges or barnyard grass, or to loaf secure in quiet waters under buttonbush. Odessa and the Refuge became a most important wetland in the mid-section of the Upper Mississippi. As years past, Canada geese adopted the shallow water. Wood ducks, too, rediscovered the bottoms, and as young woodies plunged from

ne cavities of old trees and fed on products of shallow water, eedlings sprouted to provide nesting sites in future years.

The bottoms were alive with wildlife again, much as before. But ust as man had claimed and tamed the riverside wilderness, later o turn part of it back for the creatures which called it home, man ow had the responsibility to insure those values. The River ystem, groundwater levels, flood crests and many other nvironmental factors had changed at mans' hands. To keep the ottoms free from negative influences of the "designed" River, nd to capitalize on its benefits, would be the challenge.

A big change for life systems on Odessa came with the rising vaters of the flood of 1965. The effects of that record flood, and nother high water period in 1967, remained long after the waters eceded. Emergent marsh vegetation lifted with its roots from the ld soils and floated out with the high water. Such had occurred efore, but the nine-foot channel project meant higher water for ost years, even in summer. Soils could no longer be easily xposed to sun and air during summer drought, allowing new lant growth. Open water replaced marsh, and a life zone was one with many of its wildlife values.

Following years, with high river stages and frequent flooding, ave little help. More and more marsh vegetation disappeared. imber stands also showed the shock of a prolonged high water able. Mast production declined, regeneration was poor. Zones of uttonbush disappeared. Herons and egrets were not so often ghted, furbearers sought more productive waters and deer

Photo by the Author

foraged elsewhere. Wetland values were rapidly diminished, for all creatures.

For wildlife managers, the answer lay in duplicating the natural processes which restored and kept river wetlands as wetlands before levees, dams and high water runoff intervened. In fact,

(Continued on Page 21)

A hunter hides his blind in trees.

Photo by Don Kline

Mason "Premier" grade Mallard; bottom: Mason "Standard" grade Pintail hen and "Challenge" grade Redhead hen.

Canada Goose by Pratt Decoy Factory; center: American Merganser, from Hooper's Island, Maryland, c. 1900; bottom: sleeping Canvasback, from Illinois River.

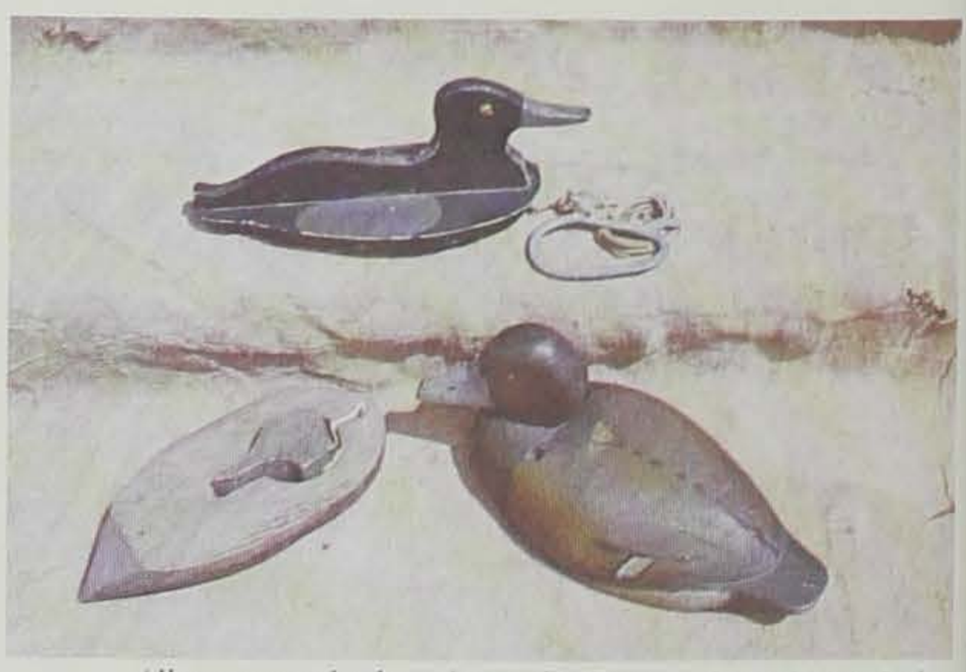
The Romance of the Decoy

by Douglas Harr
WILDLIFE MANAGEMENT BIOLOGIST

Photos by the Author

TO THIS DAY, no one is quite sure just exactly when and how waterfowl decoy making got its start. There is little doubt the craft was entirely a North American invention, first practiced by Indians, then developed to its peak by sport and market hunters near the beginning of this century. The old style, wooden, working decoy is now a thing of the past, replaced by plastic birds. Though plastic decoys are realistic looking and easily transportable, they lack the grace and craftsmanship that went into the old time birds.

Like almost any relic of the past, wooden decoys have recently gained respectability as collectors' pieces, and are widely recognized as one of America's only native folk art forms. The demand for old wooden blocks or tollers, as decoys are often called, has caused a minor renaissance in the practice of decoy carving as well. Carvers today are again turning out decoys, only now they are more often decorative birds than working blocks intended for waterfowl shooting (see "Wildlife Carvings . . . These Almost Breathe!", April, 1977, CONSERVATIONIST).



All-purpose shadow decoy, by Reeves, from Spirit Lake, Iowa; bottom: market hunting decoy with self-storing head, by P. Fronk, Spirit Lake, and Lesser Scaup hen, by Lew Roberts, Britt, Iowa, dated 1935.

Name Originated with Dutch

The word "decoy" appears to be a corruption of the Dutch "ende kooi", which translates as "duck trap". In eighteenth century Holland, large traps were utilized to capture waterfowl alive. It might be speculated that early Dutch inhabitants of New York applied their terminology to the methods used by Indians for attracting ducks and geese. After killing their first few birds

he Indians would prop up these lifeless forms with sticks along a horeline, which in turn would bring many more birds within killing range. Colonists soon refined the practice by making their own tollers from wood, so the fake birds could be used repeatedly.

In reality, the use of decoys goes back into the dark reaches of pre-history. Earliest known examples were found in 1924 during an archeological search of Lovelock Cave in Nevada. Nearly 1,000 years ago a basket of Canvasback decoys, some woven from bulrushes and others made of stuffed duck skins, was left in the cave by an ancient Indian. Since these birds were quite realistic, the practice had obviously been carried on for many generations. We may only guess at when these early natives actually happened on the idea of making and using decoys.

Similarly, it is presently unknown who the first colonist was to carve a decoy or when the first ones were made. The earliest bird still in existence was made in New England shortly after the Revolutionary War. Others were probably made prior to that period but may have been lost to decay or might have been used for firewood—a typical fate for many a wooden decoy fallen from use.

Decoy making reached its zenith somewhere between 1880 and 1920. Market hunting (mass-shooting waterfowl and other game to sell at large city markets) was a major contributor to decoy proliferation. Market hunters often required hundreds of blocks to attract equally large numbers of ducks, geese, and shorebirds. It can readily be imagined that in the peak market hunting days, around 1900, literally hundreds of thousands of decoys were produced on the East Coast alone. The most artistic carvers, often starting out as hunters themselves, were usually talked into turning out tollers for other hunters as well. They gradually took up this avocation as a full time job and became renowned for their particular carving styles. Today, the best East Coast decoys are almost all in private collections or museums. Birds by the famous name carvers like Elmer Crowell, Harry Shourds, Lothrop Holmes, or the Ward brothers frequently command fantastic prices. When a well-known collection was auctioned off in 1973, one shorebird decoy fetched the highest price ever paid—$10,500!

Decoys Become Important in the Midwest

Tollers carved in other areas of the U.S. also receive much attention, especially those from the Great Lakes states and the region along the Illinois River. Many fine blocks were produced in these and other areas of the Midwest, often rivaling those from the Atlantic Coast. Several decoy factories also sprang up to meet the demand by hunters for good quality working decoys. The term "factory" is rather misleading. Most operations seldom employed more than a dozen artisans, some turning out bodies from patterns on duplicating lathes, while others hand carved heads, painted completed birds, or packed them up for shipping.

Probably most renowned was the Mason Decoy Factory of Detroit, Michigan. It may be impossible to ever know how many thousands of blocks Mason's turned out. Even though the plant closed its doors in 1924, their decoys continue to be discovered in every corner of the country. Mason's large variety of species, body styles, and richly aged finishes make these decoys among the most highly sought by collectors. Numerous collections consist of nothing but Mason birds, and the possibility of still finding them almost anywhere has added to their immense popularity.

Iowa, too, had its share of decoy makers, though many of the early carvers are not known by name. The Mississippi backwaters have always been popular with hunters, so blocks commonly show up along the big river. In north central Iowa some market hunting was practiced in the lake regions. This resulted in peculiar styles developing to fit the needs of local market gunners. Though sometimes crude, these decoys are still interesting to the collector.

Right: Black-bellied Plover, from New Jersey, c. 1890; bottom: Willet, tin, factory decoy, patent date 1874, and pair of rare sandpiper decoys from central Minnesota.

Getting Started in the Hobby

Although the best old decoys are generally in collections and are highly valued, it is possible for a beginner to accumulate a respectable small collection. Here in Iowa, blocks will sometimes turn up at farm auctions, flea markets, or antique shops across the state. These are good places to ferret out a few shot-scarred, hand-made veterans, or perhaps a Mason in mint condition. It is even remotely possible that a small number of tollers may lie yet undiscovered in an old barn, garage, or basement. However, with their value now recognized, most of these decoys have probably been snatched up. But if you can find one and dicker with its old-time owner, you might end up with a deal you couldn't touch in an antique shop. Trading with other collectors is another way to add variety to your collection, and theirs as well.

When looking for desirable tollers there are a few things the newcomer should keep in mind. A decoy in original paint is best, even if badly worn from years of use. The value of many an old block has been ruined by well-meaning people who thought they would "just touch up the bad spots." Even the most artistic repaint is seldom as valuable as the original.

Attempts should be made to find by whom and when the decoy was made. Tollers with a known history are of far more worth than those for which not a clue can be found. The most collectible pieces are those carrying the maker's name or initials on the underside. However, it should be remembered that successive owners frequently scratched their initials on the bottom, too. This was done for proof of ownership, should the decoy happen to break a line and drift away, or when two or more hunters set their blocks out together. Some decoys will be found to have two or three sets of initials on the base.

Finally, as with any old collectible item, beware of forgeries. It's a relatively simple task for an unscrupulous antique dealer to take a fairly new wooden decoy and "age" it in order to bring a higher price.

Decoy collecting is an increasingly popular hobby for young and old. To the old hunter, decoys may recall the heyday of waterfowl hunting. To the younger collector, they might be treasured examples of early American folk art. Magazines devoted entirely to the subject and a growing number of books are valuable references to the novice collector. But what makes the hobby especially fascinating is that decoys owe their very existence to our nation's hunting heritage. In fact, if you stop to think about it, decoys are really quite a fitting and respectful tribute to the waterfowl they were so carefully made to resemble.

□

Left: undersized Old Squaw from Long Island, New York; top, center: child's toy Mallard, with lead weight added for use as decoy, c. 1880's (probably used to represent duckling, and was used with hen decoy when it was legal to hunt in spring and summer); top, right: Common Goldeneye, old factory decoy; bottom: Mallard, w/rosemalling style painting, from South Dakota, c. 1890.

Photo by R. Bishop

The Mallard Pond

by Richard A. Bishop

WILDLIFE RESEARCH BIOLOGIST

Photo by Bob Sheets

THE BIG PUFFED-UP DRAKE sitting on the log with his green head resting on his back looked like king of the pond. The old drake has loafed on that log every spring for the last hree years while his hen went about the family chores of incuating a clutch of eggs. There was always a pair of mallards on the mall pond and occasionally another pair would be seen using the ther end or another drake would be loading on a muskrat house. ienerally when an intruding paid entered his domain, the drake hased the pair vigorously until they left his defended area. This erritorial defense works as a mechanism to space breeding nallard pairs over the available water habitat. It was pleasing to lways see the drake or sometimes the pair, when I passed by the ond. I named him Charlie and I always watched for him with a ertain feeling of ownership. After three years I knew quite a bit bout Charlie and his life as a mallard—I thought I did, anyway.

The small pond offered a good home for Charlie, like numerous mall ponds and marshes do from Iowa northward through the rime waterfowl breeding grounds of the prairie Provinces of anada. Breeding habitat is becoming limited due to increased rainage for agriculture and if this trend continues, the fantastic luck production areas of southern Canada will look like northern owa. The end result will be a much reduced fall flight of ducks nd curtailed or closed hunting seasons. Consequently most vaterfowl people have become very interested in protecting reeding habitat as well as getting a better understanding of how reeding waterfowl share the remaining prime aquatic summer omes.

The Iowa Conservation Commission initiated a project on entura Marsh in Cero Gordo and Hancock Counties of northentral Iowa, to study the basic breeding biology of mallards. rom this study we hoped to gain a better understanding of the elationships between paired and unpaired mallard drakes during he spring production season and the more subtle requirements hese mallards have for breeding habitat. Possibly the results of his study would indicate to us that we could harvest more drakes vithout harming the next year's breeding population. It also ould identify the development and management techniques eeded to manage the marshes that we currently have under our urisdiction or possibly suggest the type of production habitat we hould be preserving. At least we realized that our knowledge bout breeding mallards and preferred habitat was quite limited nd improvement was needed.

The first thing was to mark ducks on Ventura Marsh so we ould identify them individually and learn something about ndividual ducks. We did this by attaching plastic markers on the ill and by painting the wings and tail. More successful than nticipated, we marked 86 drake mallards and 16 hens in the pring of 1976. Some of these marked ducks strayed a few miles rom Ventura Marsh to Cjarlie's pond and consequently his domain was included in our study area. A wife swim-in-trap was ocated in the mallard pond and a pretty little hen was placed in he middle of the trap to entice drake mallards. Well, you guessed t, we caught Charlie the next day. We marked him with a bright yellow plastic bill marker and painted his wings with bright pink paint. The next day I observed the mallard activity on this pond and I was surprised to see that the pair of mallards swimming on the pond was not Charlie and his lady. That morning we caught the unmarked drake. To make sure he wouldn't feel slighted, we dressed him up with Easter colors similar to Charlie and placed a green nasal saddle on his bill.

That afternoon Charlie returned to his log and he could be seen loafing as he had for years. The next day a drake was loafing on the big log but it wasn't Charlie or the other marked bird. Well, how could that be. Impossible! A feeling of uncertainty started to dominate the project.

To summarize the following days without great wastage of paper, we caught and marked nine individual pairs and several more drakes that did not have mates. The unmated drakes usually did not stick around long. There was always a drake or two on the pond, but it wasn't always Charlie. He and his hen would use the pond almost every day but for just certain periods. Some days he stayed all day and chased all others away; other times he occupied the pond for brief periods of time but was not aggressive toward other mallards. A few times we spotted Charlie and his mate loafing in plowed fields or temporary field ponds as far as one and a half miles from the pond.

When Charlie's hen started incubating her clutch of 11 eggs along the railroad tracks, she spent lesa and less time feeding and loafing with him. As the days passed, Charlie became more and more sociable and usually could be found in the company of several other marked drakes whose hens were incubating also. He no longer insisted on chasing away the other mallards that wanted to use his pond.

At least seven pairs initiated nests in the vicinity of this pond. Two were destroyed and five hens brought their broods of ducklings to the pond. By this time, the drakes were starting to lose their bright breeding plumage and were seen less frequently. Often four or five would be loafing together—their job was done and they seemed to sense it.

The "mallard pond" taught us a valuable lesson. Until we marked the ducks using the pond, we assumed the birds we observed were always the same ones. This was not the case. Many mallards used this pond as part of their home but to avoid conflicts, they spaced themselves during the day. You could almost say they set up a schedule of sharing so everyone could get along.

Not all mallards nested at the same time. It seemed that some hens were well into incubation and when their drakes became more friendly, other pairs move in and set up housekeeping with a minimum of harassment.

This little two-acre marshy pond was responsible for raising five broods of mallards and at least that many broods of blue-winged teal. The value of this habitat is evident, but without the association with the larger marsh area and other temporary field ponds, it is doubtful that this small piece of habitat would have been so productive. But the main point is that it did provide a home for at least seven pair and they were able to coexist until they completed their reproductive duties. We learned that it was difficult to accurately understand what was taking place without marked birds. Maybe these birds are adapting to reduced breeding habitat or this area provided a premium food supply of invertebrates that attracted many mallards. Probably a combination of many factors created this situation but it taught us a lot about mallards and their relationships. Small marshes close to other larger more permanent areas may offer the best potential for breeding waterfowl. Our acquisition and development programs will hopefully reflect this knowledge. Marsh habitat in Iowa can and does support larger mallard breeding populations than we expected. Our marshes, on a per acre basis, will produce as many or more ducklings than those in the prime area of Canada. □

1977 STEEL SHOT REQUIREMENT FOR WATERFOWL

by Richard A. Bishop

WATERFOWL HUNTERS in Fremont and Mills counties will be required to use steel shot for the hunting of waterfowl on all waters and a 150 yard zone of land adjacent to these waters. The waters referred to include lakes, ponds, marshes, swamps, rivers, streams and seasonally flooded areas of all types. Drainage ditches and temporary sheet water more than 150 yards from the water areas described above are excluded from the steel shot requirement. These two counties were selected because of past waterfowl die-offs attributed to lead poisoning and high annual waterfowl harvests. The use of steel shot will apply only to the hunting of ducks, geese and coots because the hunting of these species is believed to be the source of most lead deposited in wetland areas.

Lead poisoning has long been a problem that has plagued the waterfowl resource and the waterfowl hunter that utilized this resource. Approximately 2 million ducks die annually in the United States from lead poisoning that results when ducks swallow spent shotgun pellets while feeding in marshes.

Lead pellets swallowed by waterfowl pass through the upper digestive tract to the gizzard where they are converted to a soluble form and absorbed by the bloodstream. Lead causes a reduction in oxygen supplies to all tissues. It interferes with the body's ability to break down glucose or other carbohydrates, leading to weight loss. Lead disrupts the production of hemoglobin, and anemia is the likely result. The imbalance in blood chemistry impairs the functioning of the liver and heart and causes damage to these organs. The external symptoms seen in birds are emaciation as severe as 40 percent loss of weight, wing droop, refusal to eat, a tendency to seek isolation and cover, and loss of the ability to walk or fly.

Waterfowl managers have long been interested in finding a substitute for lead shot to reduce this needless waste of birds. Research finally produced a reasonably acceptable substitute for lead—soft iron shot commonly called steel. An environmental impact study was conducted by the U.S. Fish and Wildlife Service on the ramifications of using steel shot and a final environmental impact study were: (1) From 1.6 to 2.4 million ducks die each year from lead poisoning and many others are no doubt weakened by the presence of lead in their bodies. (2) Lead shot pellets are being deposited by waterfowl hunters at the rate of 3,000 tons a year in the United States. (3) Lead shot is showing up in the digestive tracts of waterfowl in about the same proportions as it did in the 1950's indicating that current deposits of lead are the source of the problem at most locations.

To stop the accumulation of lead in areas where ducks were being poisoned, the Secretary of Interior decided that steel shot ammunition would be required for waterfowl hunting on selected areas in the Atlantic Flyway in 1976, extended to selected areas in the Mississippi Flyway in 1977 and then portions of the Central and Pacific Flyways in 1978.

Each state in the Mississippi Flyway has designated zones where only steel shot will be allowed for waterfowl hunting. Iowa selected Fremont and Mills counties as explained earlier. The steel shot areas for Iowa are small compared to steel shot zones in some other states in the Mississippi Flyway. The smaller size is primarily due to the overall lower waterfowl harvest per county in Iowa. This is just the initial trial of steel shot and additional areas may be included in future years.

To say the least, the steel shot issue has been a controversial one. The main objections voiced are potential problems of barrel damage, increased crippling loss due to less efficient shot and the cost of steel shot.

Information to date does not substantiate the claims of serious barrel damage. Field tests in Michigan in 1973 showed no misfired or blooper rounds or burst barrels. The U.S. Fish and Wildlife Service has the following to say about barrel damage:

"The potential problem of barrel damage with steel shot is one of choke expansion which, when it occurs, appears as a slight ring bulge near the muzzle. Tests indicate that the degree of choke expansion varies with different types and models of shotguns. For most shotguns, choke expansion under full choke constriction either has not occurred or has been sufficiently slight as to have no significant effect on gun performance.

"There is no evidence that choke expansion poses any safety hazards beyond those normally existing with any ammunition. A slight change in patterning might result from choke expansion, but the tests indicate that such changes are usually very minor and may actually result in slight increases in pattern density. Moreover, choke expansion apparently is not a problem unique to steel shot. In some guns it was found to occur also with lead shot, although to a lesser degree. The potential for choke expansion appears to be greater in guns with full-choke constructions than those with modified or improved cylinder constrictions. Shotgun owners can write or contact the manufacturers of their guns for more specific facts about the impact of steel shot on individual gun models."

The efficiency of steel shot and the possibility of crippling more birds does not appear to be serious. Studies conducted by the U.S. Fish and Wildlife Service showed little difference in the effectiveness of standard 1¼ ounce lead shot and 1⅛ ounce steel shot loads. Steel pellets are harder than lead pellets and suffer essentially no deformation when they are fired. The result is a more evenly distributed pattern, a shorter shot string, and pellets that deliver their energy to the target more efficiently than lead pellets.

Field tests in Michigan showed it took more rounds to bring down waterfowl with steel shot than with lead, both materials showed nearly equal efficiency up to 35 yards. The data showed no significant differences in the crippling rate for either shot material.

Michigan biologists concluded that if steel shot was used statewide, probably fewer ducks would be downed by Michigan hunters. Although a greater proportion of the downed birds might be lost as cripples, Michigan hunters using steel shot would subject waterfowl populations to less mortality than is occurring at the present time with lead shot.

The cost of steel will no doubt be greater. It is estimated by ammunition manufacturers that steel will cost at least 50 percent more than lead shells.

The pros and cons of this issue seem to be many and I have not had the personal experience with steel shot to adequately evaluate the situation. Like many of you, I will wait and see first hand what develops from our experiment. The data that I have most faith in, strongly supports the use of steel shot. The waterfowl resource is the real issue and I question whether we, as sportsmen, can risk the chance of not decreasing the losses to lead poisoning by the use of shooting steel. If we do not provide statesmanlike stewardship of this valuable resource, we will probably be denied the opportunity to enjoy it through hunting.

Iowa has experienced some major losses from lead poisoning in the past and many birds no doubt die a few at a time and go unnoticed. During the winter of 1965 and 1966, approximately 2,500 mallards died from lead poisoning at Forney's Lake in

Lead-poisoned geese collected at Forney's Lake.

Fremont County. In 1967, about 1,000 mallards and 200 snow geese died in Fremont County in early winter. Conditions for lead poisoning were ideal during those years with large numbers of mallards present, temperatures were mild enough to allow open water after the close of the season, a large amount of lead was available and the birds were on an all-corn diet. Birds on a straight corn diet are more susceptible to poisoning due to increased action of the gizzard. The grinding of the gizzard erodes away the shot pellet, freeing the lead to pass into the blood stream.

Birds were collected in 1965 and 1967 and were tested by the Iowa State University Diagnostic Laboratory. The toxicology report indicated lead as the toxicant.

A total of 123 mud samples taken from the bottom of Forney's Lake at a 2-inch depth, indicated about 50,984 shot pellets per acre and 4-inch deep samples showed 113,256 pellets per acre. The potential for lead poisoning exists at Forney's Lake, Riverton and many private shooting areas.

In most years water areas freeze over prior to or shortly after the close of the duck season and therefore the ducks do not have access to much of the available lead. However, during the spring migration ducks are allowed to use all these hunting areas unmolested and are exposed to the large amounts of lead. It is during this time of year that perhaps some of our most serious losses occur but go undectected because they are scattered over a wide area and few people are afoot in the wetlands. Each spring we have reports from wildlife biologists of dead waterfowl. Many of these ducks have been analyzed over the years and most were diagnosed as having lead poisoning. This is probably more widespread in our state than we realize.

Public opinion of hunters in Michigan is strongly for the change-over to steel. Sixty-five percent of the hunters that participated in the Michigan experiment and used steel shot, expressed satisfaction with its performance. Twenty-five percent of the hunters were undecided and ten percent of the hunters said they were dissatisfied with steel. They reported that most of the dissatisfied group had lost cripples or complained of lack of knock-down power.

At our last Mississippi Flyway meeting, the President of the Michigan Waterfowl Hunters Association stood up and strongly voiced their support for action to decrease waterfowl losses to lead poisoning. This young man was quite convinced that a mandatory ban on lead shot was essential and apparently a good number of Michigan sportsmen support his view.

The success of the steel shot program depends on you. There are no doubt ways that hunters can impede the progress of change-over to steel shot or circumvent the regulations. We do not have enough enforcement officers to check everyone, therefore sportsman cooperation will be a necessity if this program is going to be successful. The Conservation Commission is not trying to sell you a bill of goods, it's **your** program and **your** decision. The Iowa waterfowlers will reap the benefits of higher survival rates of ducks or they will pay the price through curtailed hunting opportunity and fewer ducks. If the steel shot program does not produce outstanding problems it would be in the best interest of waterfowl hunters to encourage greater participation by their respective game departments. □

Photo by R. Runge

The History of FORNEY LAKE

by Robert Moore
WILDLIFE MANAGEMENT BIOLOGIST
Photos by the Author

ONCE UPON A TIME the Missouri River flowed from bluff to bluff leaving behind numerous lakes as it neandered through the wide flood plain. As time passed, some lakes were filled but a ew remained through the march of time.

One such lake nestled along the bluffs hat is a reminder of the once wild river is Forney Lake in Fremont County located north of Thurman. The history of Fremont County points out that there were two akes fairly close together. One located on he Mills-Fremont County line was known is Upper Lake and is now a crop field. The econd was further south and referred to as Waubonsie Lake—known today as Forney Lake.

The lake was named for Waubonsie, a chief of the Pottawattamie Indians, who resided with a band of that tribe on the borders of the lake, and was considered the owner. When the final treaty (1842) was made, ceding these lands to the government, Waubonsie was one of the few who lingered after nearly all the other Indians had departed for their new Kansas home. It is believed Chief Waubonsie was buried in the bluffs near his beloved lake.

The area was homsteaded by Frank Forney in 1865. The Forneys were on their way from Illinois to Utah when some cattle strayed from the wagon train's herd. Some days later the cattle were located in the Waubonsie Lake vicinity. Forney was attracted to the area and decided to travel no further. Since then the area has been known as Forney Lake.

Frank Forney was the grandfather of Dale Forney who resides just south of the area today. Much of the early history was related to me by Dale.

There were still Indians in the area around 1865. An Indian squaw would come down from the bluffs to the Forney Cabin for home-made bread. She always left her papoose outside the Forney Cabin.

As time marched on and the area became more populated, the lake became a focal point for family and community gatherings. There was a dance hall, a field set aside for playing baseball, throwing horseshoe, shooting blue-rocks and a concession that handled boats for fishermen and provided excursions out on the lake for 10 to 12 people at a time.

The area was known far and wide for fine duck hunting. Many distant hunters would lease blinds on the area. Forney would meet the train at McPaul, some three miles south of the lake, and haul the hunters and their gear the rest of the way by team and wagon.

During market hunting days, the lake was a big, open body of water. Forney decreed that only Canvasback ducks would be shot. They were then sold on the market in Omaha.

Forney Lake received its water source from numerous hollows (valleys) in the surrounding bluffs, springs, and also from the overflow of Waubonsie drainage ditch to the north that then supplied the water for Upper Lake.

In time the settlers broke up the sod on the bluff ridges and in the easily eroded hollows (Green Hollow, Indian Hollow, and Dry Hollow to name a few) that eventually drained into the lake. These drainages combined with the silt laden waters from the flooding Missouri River and Waubonsie ditch slowly silted in the lake.

Gradually, Forney related, portions of the lake were farmed from time to time. Wheat, barley and corn were the main crops. Frequently a heavy summer thunder-storm would flood out the crop.

The lake was purchased from Floyd Forney (Dale's father) in 1943 by the Conservation Commission for a sum of $33.55 per acre. Purchase of additional surrounding ground that same year brought the total to 868 acres. In 1951, 200 acres were added to the area for a total of 1,068 acres. The area is roughly classified as 550 acres potential crop land and 518 acres permanent wetlands.

The most recent years the Missouri River deposited silt in the area were 1943, 1952 and again in 1961. The disastrous spring flood of 1952 left behind three to five feet of silt. The spring flood of 1961 put the finishing touch of silting in the lake when a portion of the Missouri River levee broke near the town of Bartlett.

Canal can be seen from air.

Today, the description of "marsh" would be more applicable than "lake" for it has passed through various stages of succession to its present status of wetland.

The Commission's primary objective with this area is to provide a safe resting area for waterfowl during the spring and fall migration; and secondarily, to provide for a public use area.

What are some of the management steps that have been undertaken to meet this objective?

First of all, a 500 acre refuge was established to provide a secluded resting area for waterfowl. This area is inviolate (no trespass) from October 1 through December 15. Two deep wells were drilled and pumps installed in 1964 in order to insure water would be available in dry years. Over 15 acres of wildlife shelterbelts have been planted. These plantings coupled with a planned crop pattern provide food and shelter for a great variety of game and non-game species.

Historically, the area has been a popular waterfowl hunting site. Heavy hunting pressure and disregard for hunter safety resulted in partial controlled hunting in 1966 and full control in 1969. Now the number of hunters on the area at one time and hunting conditions are regulated to provide a quality waterfowl hunting experience.

The area is open to other game hunting following the goose season. Trapping in the refuge is not permitted.

Other public uses of the area are varied. A few years back, the area provided a spectacular flower show. Hundreds of flowering lillies (lutus) attracted viewers in late summer. Today the lotus bed is restricted to an area at the northwest corner of the marsh. The dried seed heads of the lotus are collected by many and used in making flower arrangements.

Each year a number of groups from scouts to college classes use the area for field trips to study the plant and wildlife of a marsh community.

The use of the area by Lesser Snow geese in the spring is an attraction that annually draws spectators from the distant corners of Iowa as well as surrounding states. The viewer can expect to see the greatest concentration of geese around March 15th.

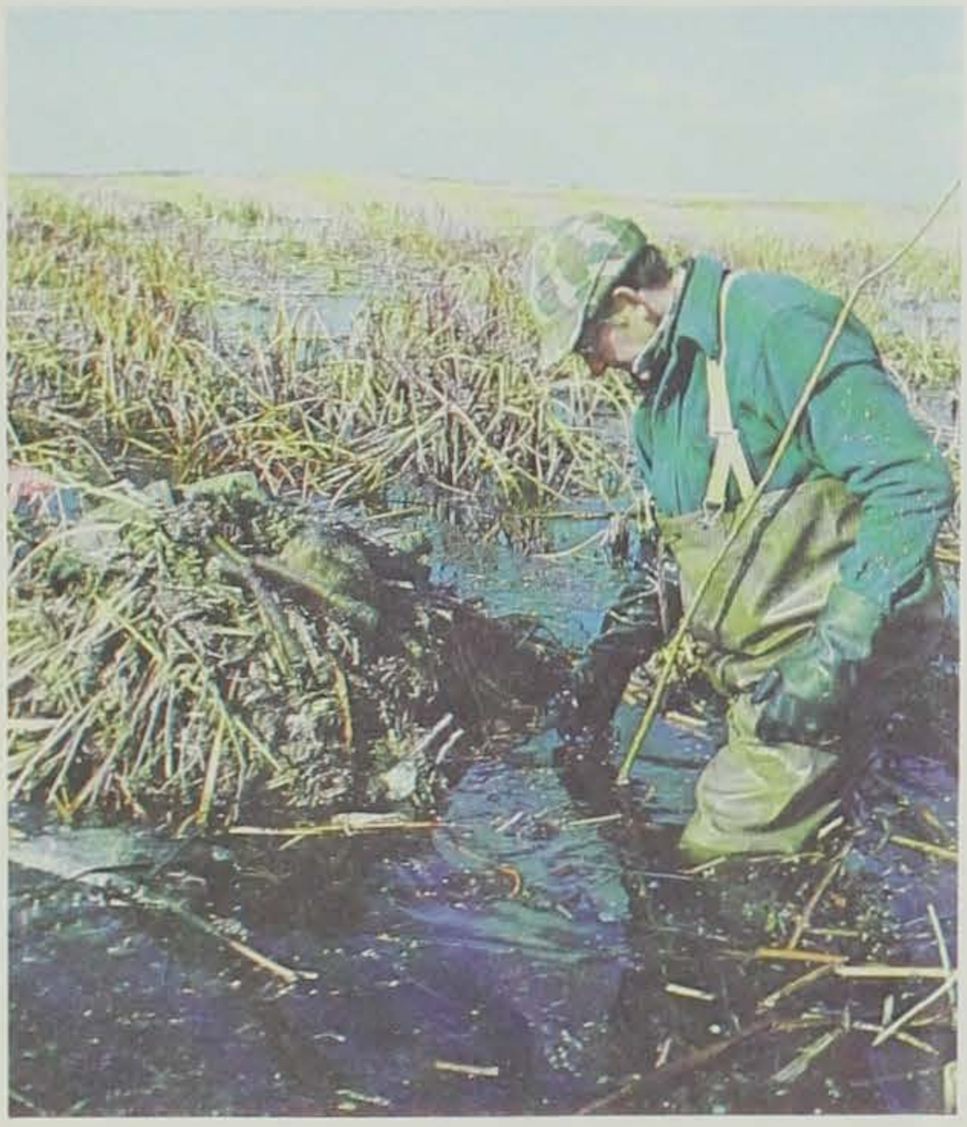
Yes, time has changed this area in many ways. Gone are the prairie chicken and occasional sage grouse—to be replaced by the ring-necked pheasant. Yet at the same time the area continues to attract thousands of migrating waterfowl and provides an essential ingredient in their well being. □

Photo by Dick Bishop

The Conflicts and Controversies of

SETTING FURBEARING SEASONS

Photo by Ken Formanek



by Ronald D. Andrews
STATE FURBEARER BIOLOGIST

FURBEARER SEASONS, like most other game seasons, are set within biological limitations with consideration of the bio-political ramifications. These bio-political considerations are referred to as people management. The people management aspect of setting fur seasons is a complicated factor, especially during this era of high pelt prices. As long as furbearer seasons are set on a statewide basis, sportsmen must view the seasons with a broader understanding and realize the need to consider sportsmen in all portions of the state. Tunnel vision by self-centered sportsmen groups causes problems. Season dates are set to provide the greatest recreational opportunities for the majority of the sporting enthusiasts. In recent years, because of increasing pelt values, it seems fewer sportsmen are satisfied with season dates.

First consideration in setting any season must be the resource. Next is the recreational interests of the sporting factions involved, attempting to set seasons that will provide maximum hours of recreation while still sustaining the resource. With furbearers, pelt primeness must be considered, particularly during this period of record high pelt prices. Consideration must also be given to weather variation across the state as well as differences in furbearer populations.

The hunter-trapper conflict is as old as the invention of the tools of their trade. It is something that we have lived with almost since man first settled this nation. Many of us think the heyday of the fur business occurred when pioneers first arrived in Iowa. While it is true that many settlers eked out a living on fur trade during those pioneering years, record breaking fur values have occurred in the 1970's. These high pelt prices have only added fuel to the fire of the hunter-trapper feud. Not only that, they have actually caused hunters to square off against hunters, specifically resident hunters against nonresident hunters. Another problem created by the high pelt values and increased hunting pressure is that landowners are less tolerant of hunters and trappers. Because of unethical behavior by both the hunter and trapper in pursuing their quarry, the image of the sportsman is being badly tarnished. People become very selfish when money is involved. All these factors make fur seasons difficult to establish.

Fur seasons are set each year about the middle of the summer, nearly six months prior to season openings. The fur harvest totals based on fur buyer reports provide a retrospective view of furbearer populations. Table 1 shows the new record value of 8.9 million dollars worth of fur taken during the 1976-77 season. Since the 1972-73 season, new record values have occurred four out of the last five seasons. Prior to these years, the total fur harvest ranged between one-half to slightly over two million dollars.

Besides the fur buyer harvest totals, Commission personnel assemble impressions of the population of each fur species. These impressions are based on field signs left by furbearers such as tracks, scats or droppings, active dens, and visual sightings.

As state furbearer biologist, I initially make season recommendations based upon the harvest data and the impression I get while attending such meetings as the State Raccoon Hunters Association, the Iowa Trappers Association, and the Fur Takers of America as well as visiting with fur pursuing enthusiasts from across the state. I then draft initial recommendations which are distributed statewide to all wildlife and enforcement personnel for their comments. Then a meeting is held in Des Moines where district officer supervisors, district wildlife management supervisors, research biologists, and the administrative staff review, discuss, and occasionally overhaul the initial fur season recommendations. They are then presented to the seven Conservation Commissioners for their approval. The track record has been good and most of the time, the recommendations are readily accepted by the Commissioners.

Two species of furbearers, fox and racoon, create most of the conflicts when fur seasons are set and understandably so because these are species that are being pursued by both the hunter and trapper. Also, these species are currently at record high pelt values.

Fox

It was not until 1969 that the legislature changed the law to allow the Commission to set something other than a continuous open season on foxes. The fox, like many predators, has had an historical air of controversy. Many believed that the fox was taking many game birds and animals and causing declines in these populations. Many small poultry farmers in the 1940's and 50's believed that foxes were destroying their business enterprise and all-out war was declared. Foxes were persecuted year-round, with many pups being destroyed at den sites.

In the 1960's and 70's, research studies indicated that foxes play an important role in the wildlife community. Given *"adequate"* habitat, it was learned that predators and prey can live compatibly without harm being done to the prey population. This new image of the fox led to the first restricted season in 1970.

The first fox season was liberal and was primarily set to protect fox pups during the spring and summer months. Hunting and trapping opened concurrently on September 1 and closed March 1. The fox season was favorably received the first couple years. In 1972, increasing fox pelt prices occurred resulting in increased fox hunting and trapping presssure. These factors, plus intense agricultural practices which made the fox more vulnerable by removing needed escape cover and destroying denning sites, contributed to a decline in fox numbers.

Concern for the fox and the policy of our Commission to provide maximum hours of recreation while sustaining the resource led to differential fox hunting and trapping seasons. An attempt was made to ration and more equitably distribute the fox harvest on a per sportsman basis. Fox hunters outnumber fox trappers, perhaps 10 to 1. Fox hunters require and expend considerably more hours to take a fox than do trappers. Also hunters are pursuing their quarry on a one-on-one basis where trappers have their tools placed out 24 hours a day. During the 1975-76 and 1076-77 seasons, three and four week fox trapping seasons were established in November and early December. Hunting seasons occurred in November, December and January. Although trappers were very disgruntled by this, it appeared to be a satisfactory solution to distributing the take more equitably between the two sporting factions.

One difficult problem was occurring, however. Some trappers were still taking foxes in traps that were supposedly set for coyote, raccoon, skunks, or badgers. These foxes were not being released alive or if they were they were shot upon release and bagged as hunted fox because the hunting season was still open. Conservation officers found that the differential hunting and trapping season dates made the illegal taking of fox by trapping after the closed season nearly unenforceable.

Prosecution of illegal fox cases was difficult because of the differential season dates. Officers were laughed out of the courtrooms and consequently it became an administrative decision to return to a concurrent fox hunting and trapping season—November 26, 1977, to midnight January 11, 1978.

This is a very late opening for the fox trapper and he's bound to show his ire. Why then so late? Again, the intent is to more equally ration and distribute the harvest between hunter and trapper. Fur buyer reports indicate that even though the hunter outnumbers the trapper 10 to 1, the trapper has taken one-half to two-thirds of the fox during the past two seasons. The late fox trapping opening of November 26 could reduce the take by trappers, particularly during some of the "normal" inclement weather during this period. The fox trapper will be gaining about a one-month longer season, but conditions will be more difficult. Hopefully, when and if fox pelt prices are reduced, we will be able to liberalize the season dates. In the meantime, tempers between fox hunters and trappers will likely remain hot.

The concurrent hunting and trapping season should resolve the enforcement problems because any fox in possession before or after the season dates will be illegal. Trappers must remember that foxes taken in land sets prior to and after the season dates must be released.

The hunting season has been shortened at both ends. While shortening the early part of the season does not necessarily affect the overall take by the fox hunter, the 10-day reduction at the tail end should curtail the hunter take and protect more bred female foxes.

Some fox hunters are causing additional conflicts and controversy because of the unethical manner by which they are pursuing the fox. The use of four-wheeled vehicles and C-B radios has reduced the sportsman-like pursuit of the animal. Landowner attitudes are at or near the breaking point because of these deplorable and unethical actions.

Raccoon

Like the fox season, the controversy associated with the raccoon season has increased considerably since 1970. This conflict also corresponds with high raccoon pelt prices.

The raccoon population has been maintaining itself at a very high level during the past 10 to 15 years. Prior to 1970 their pelts were of little value. Both then and now raccoons remain the number one nuisance animal complaint that commission personnel receive because of the invasion into sweet corn or tomato patches as well as farm buildings. People concerned with pseudorabies in livestock are trying to point their finger at the raccoon as a major carrier without one bit of data to justify the accusation.

Raccoon season dates were very liberal in the 1960's but as prices began to increase, more restrictive seasons became necessary. The increasing prices brought an invasion of nonresident raccoon hunters into the state searching for the "big" Iowa cornfed masked marauder. Resident raccoon hunters got their "dander" up because they believed nonresidents were taking more than their share of the raccoon harvest. The problem has become quite political and, in fact, legislation has been inacted to charge nonresident raccoon hunters $100 for a raccoon hunting permit with a limit of 20 tags.

Success in raccoon hunting can often be directly related to weather conditions. Because of weather variations in Iowa the raccoon hunting season was zoned in 1972-73, 1973-74 and 1974-75. The zone appeared to answer the problem for a year but soon southern Iowa raccoon hunters were invading northern Iowa territory because of the two-week earlier opening. It appeared that a civil war was going to break out between the two groups. Therefore a compromise was made and the difference between the two opening dates was split and we returned to one statewide opening which is the last weekend of October. Southern Iowa raccoon hunters believe that this is still about 10 days too early because of the invasion of Missouri raccoon hunters. Missouri's raccoon season traditionally opens about November 10. To open the season much later in north Iowa would be an injustice to the northern Iowa raccoon hunter because freeze-up and harsh weather can occur soon after mid-November, thus greatly curtailing the north Iowa raccoon hunters' recreation.

Attempts have been made during the past three years to open all trapping seasons on one date. This, of course, has been thwarted for legal, administrative, and political reasons. This year's raccoon hunting and trapping season will be October 29, 1977, through January 22, 1978. This will mark the first statewide concurrent raccoon hunting and trapping seasons for several years. From an enforcement vantage point, this is the best solution. Although it would be of merit to allow dog hunters a week of freedom from raccoon traps, the enforcement aspect of having raccoon hunting and trapping concurrent again weighs heavier in this case.

Other

Although conflicts occur over other furbearer seasons, none are as great as the fox and raccoon. At presant the coyote season remains open year-round. The coyote population remains very healthy and, in fact, it is expanding its range. There remains quite an air of controversy associated with the coyote so far as its impact on the livestock industry in southern Iowa and perhaps on deer fawns and turkey poults.

The other fur species have only trapping seasons set on them. While this does eliminate most of the squabbles between two different sporting factions, other types of controversy occur.

The mink and muskrat season has traditionally opened in early November and continued through the end of December. This season has been readily accepted by most trappers.

The beaver season is probably the most controversial of all the trapping seasons. The 1977-78 beaver season will be 6 a.m., November 5, to midnight, March 26, except that portion along the Mississippi River north of I-80 and east of the Davenport, Rock Island and Northwestern Railroad tracks and the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks where the season will be 6 a.m., December 31, to midnight, February 26.

For most of the state this is an extremely long season, lasting for about five months. Unfortunately, high beaver populations and agriculture are not compatible. Each year Commission personnel receive many beaver damage complaints from farmers. Most of these complaints center around beaver dams flooding small portions of crop fields and plugging tiles. Occasionally they will eat a few stalks of corn or cut down desirable trees.

Because pelt prices remain relatively low, trapping pressure for beaver has been light so the population has been stable to slightly increasing. The season opens November 5 with the other aquatic furbearer seasons. Beaver pelts are not fully prime during this period but it does allow the trapper to take beaver prior to extremely harsh winter weather. The season extends into the early spring because this is when pelts are fully prime and "professional" beaver trappers like to trap beaver under the ice. The long season will hopefully keep the population in check and in turn reduce the costly number of beaver damage complaints our personnel encounter.

The shorter December 31 to February 26 season on the Upper Mississippi River is during the period of good pelt primeness and ice conditions. The beaver on the river are important and compatible with managing the area for waterfowl because of the pools they create. To exploit them on the Mississippi River is not desirable from a waterfowl management viewpoint, therefore a shorter season occurs there.

The spotted skunk was given complete protection last year and will remain protected this year. Trapping has not been the important factor in the spotted skunk population decrease but rather deteriorating habitat.

As one can see from all the controversy associated with setting fur seasons, one item stands out first and foremost—fur pursuing sportsmen apparently have little regard for their fellow sportsmen when pelt prices are high. This is a very unfortunate situation. Sportsmen cannot afford to fight against one another. They have much bigger problems looming on the horizon. Their image is badly tarnished by their self-centeredness and unethical manner. With a large force of pseudoecologists trying to stop hunting and trapping, this conflict between groups only strengthens the anti-hunter and anti-trapper cause. It is time that sportsmen rallied together to defend their sporting interests rather than continually squaring off against one another.

One other important fact that fur hunters, trappers and fur buyers should consider is that they are reaping far more from their pursuit than they are paying as far as perpetuating and conserving the fur resources. They should band together and voice their concerns toward positive wildlife conservation and management rather than wrangle with one another over who is going to get the most from one particular season. They must be willing to dig deeper in their pockets and contribute more funds to manage and acquire valuable wildlife habitat. Time in running short! Internal squabbling has no positive wildlife gain. The choice is yours—either rally together now or the only choice you may have is to hang up your guns and traps forever.

Photo from Merrill Jack

A Rare Visit From The

CORNFIELD DUCK

by Kenneth Reynolds
and DeWaine Jackson

IN MEXICO it is known by the natives as *"patos maizal"* or the *"cornfield duck."* In the United States, one may hear it called the black-bellied tree duck or black-bellied whistling duck. Regardless of which name you choose, one thing is certain, this waterfowl species is a very interesting and beautiful bird.

The geographical distribution of the black-bellied whistling duck is relatively restricted. The northern race of this species commonly breeds from southern coastal Texas through coastal Mexico and Central America. A southern race is known to breed from Panama south into northern Argentina. Despite this limited range, at least one female member of the species decided to leave the sunny south this spring and pay a visit to Iowa.

The black-bellied whistling duck in question was captured at Zirbel Slough in Cerro Gordo County on May 8, 1977. The authors were conducting a research project on the mallard duck and discovered the "cornfield duck" in one of the traps being utilized for the capture of drake mallards. After consultation with Mr. Richard Bishop (state waterfowl biologist) and Dr. James Dinsmore (ornithologist at Iowa State University) it was determined that this was the first recorded observation of this species in Iowa.

The black-bellied whistling duck ordinarily nests in tree cavities much like the wood duck. Occasionally nests will be found on the ground, often at a considerable distance from water. The number of eggs per nest averages about 13 and they look very much like eggs of domestic poultry. Both the male and female aid in incubation which is a very unusual practice among waterfowl. Incubation lasts approximately 28 days and once hatched, both parents remain with the brood for at least 6 months.

The diet of the black-bellied whistling duck is primarily one of grain. According to one author, in its normal southern range, large flocks can be seen feeding in the sorghum stubble or in cattle feed lots consuming scattered grain. Perhaps this bird's favorite food is corn and it can often be seen perching on the stalks in order to reach the ears of corn. It is because of this feeding behavior, that the bird receives its Mexican name *"patos maizel"* the *"cornfield duck."*

As Iowa is nicknamed the tall corn state, it seems only fitting that we should have been paid a visit by the *cornfield duck*. Perhaps, in the future, another will come our way and provide someone else with a look at a truly beautiful bird. □

*Furs Purchased from Iowa Trappers and Hunters as reported by Iowa Fur Buyers during the 1976-77 Season **

SPECIES	NUMBER PURCHASED	PERCENT CHANGE FROM 1975-76	AVG. PRICE PER PELT	TOTAL VALUE
Muskrat	252,754	- 35	$ 4.31	$1,089,369.74
Mink	15,956	- 13	14.06	224,341.36
Raccoon	264,819	- 9	22.51	5,961,075.69
Beaver	7,773	+ 51	11.60	90,166.80
Red Fox	22,699	+ 43	46.33	1,051,644.67
Gray Fox	1,795	+ 14	26.17	46,975.15
Coyote	12,226	+ 29	33.34	407,614.84
Opossum	36,493	+ 38	1.59	58,023.87
Spotted Skunk (Civet) **	46	- 57	2.00	92.00
Striped Skunk	5,441	+ 181	1.66	9,032.06
Badger	2,136	+ 69	17.71	37,828.56
Weasel **	4	- 92	1.00	4.00
TOTAL PELTS	622,142	- 18	**TOTAL VALUE**	$8,976,168.74

** 202 of 217 licensed fur dealers reporting.*

*** Season on spotted skunk (civet) and weasel was closed during the 1976-77 season.*

Center of East Slough

THE INGHAM LAKE, HIGH LAKE, CUNNINGHAM SLOUGH, WEST SWAN LAKE WILDLIFE MANAGEMENT AREAS

by Ronald Howing WILDLIFE MANAGEMENT BIOLOGIST

Photos by the Author

THE Ingham Lake, High Lake, Cunningham Slough, West Swan Lake Wildlife Management Areas are multiple use areas with 2,072 acres of water and 1,063 acres of land totaling 3,135 acres. They are located six miles east of Wallingford, Iowa, in central Emmet County in northwestern Iowa. These areas lie within the glaciated prairie region of northern Iowa. They are a series of natural lakes and typical prairie marshes, interspersed with timber, shrub and grasslands with some agricultural lands. The natural lakes, Ingham, High and West Swan are sovereign bodies of water owned by the State. Land was acquired by the State around these lakes during the 1950's and 1960's to provide additional wildlife habitat and preserve many of the natural features, such as the marshland, prairie and timber.

At one time, this area was the site of an lian Village. The main village was on the th side of Ingham Lake in an area called g Island Grove" by the early settlers. nnebago Indians moved from this area Nebraska. Some of them returned to this a at least twice during the 1880's and 90's for protracted stays. There was an raction to this little wilderness hidden ay in the "deep tangled wildwood" ween the lakes and marshes that lured Indians back to fish, hunt and trap.

The late L.B. Nelson lived on the east e of Ingham Lake, when he was a little y, and remembered the Winnebago lians camping at "Big Island Grove" on south side of Ingham Lake. The Chief s Chief Moon Eye. He said he was afraid the Indians and the many dogs they had. hen they hauled wheat to Estherville they ed to get home before dark because they d to go by the Indian Village. He said the dians hunted, fished and trapped—then ded some of their bounty with the tlers for flour, etc. He related one story me (by tape recording) about the Indians nting geese in this area. He said "one day saw about 75 to 100 geese land on the arsh (now State land) north of his home. ter a few minutes four to five wagon ads of Indians with guns and dogs passed . The Indians and dogs circled the whole ough, waded out to the geese, then the ooting started. Only about a third of the ese flew away. They also lost very few ese because of the many dogs." He said at he found a lot of buffalo heads in the rtheast part of High Lake during 1894 hen the lake was dry. He was told that ring an early winter snow storm the ffalo would concentrate near the timber r protection. The Indians would drive the imals out on the thin ice where the ffalo would break through. They would en kill and butcher the buffalo.

Ingham Lake used to be called Mud ake. The lake was renamed Ingham Lake honor of Captain Ingham of the U.S. avalry from Fort Belmond in Jackson, linnesota.

The vegetation in these lakes and arshes consists of typical marsh plants ith such species as river bullrush, cattail, undstem bullrush and sedges being ominant. Sub-mergent species include ontail, pondweed species and others nerally associated with prairie lakes and arshes.

The vegetation on upland areas are rgely grassland, shrub and timber pecies. There are some native grassland pecies. However, most of the grassland as been seeded to domestic species. Some f the native shrubs species present are hoke cherry, wild plum, goose berries, ild rose, brambles and buckbrush. Some horticultural species of shrubs, like honeysuckle, caragana, nine bark and dogwood, have been planted to provide wildlife habitat. The timber vegetation is mostly bur oak with elm, boxelder, maple, basswood, ash, hawthorn, cottonwood and walnut. Vining species and many wild flowers are found in abundance. Willow trees are found in many of the wet areas. There are 40 acres of agricultural land farmed to provide wildlife food and cover.

The natural lakes, Ingham and High, are managed primarily for fishing. Fish species present are walleye, northern pike, largemouth bass, yellow perch, bluegill and bullhead. Fishing success is very good during certain years—especially two to three years after a winter-kill and new stocking. These lakes have a severe winter-kill about once every four or five years. Other water activities include water skiing, boating and swimming.

The marshes, timber, grassland and agricultural land are managed primarily for the production of waterfowl, upland wildlife and forest wildlife species. Mallards, blue-winged teal, wood ducks, coot, giant Canada geese, rails and occasionally other species of waterfowl stay to nest and rear their young. It is estimated that duck production is near 1,000 and giant Canada goose production is near 1,000 annually. These areas also provide habitat for pheasant, rabbit, squirrel, white-tailed deer, furbearers, small mammals and many species of birds. These areas are open to public hunting and trapping. Waterfowl, squirrel, rabbit, deer and pheasant hunting are the dominant hunting activities. Trapping is by a permit and quota basis.

Other activities on these areas are nature study, outdoor classrooms, hiking, horseback riding, bird watching, primitive camping, picnicking, cross-country skiing and snowmobiling. Some of these activities are restricted to areas where they will not interfere with wildlife use.

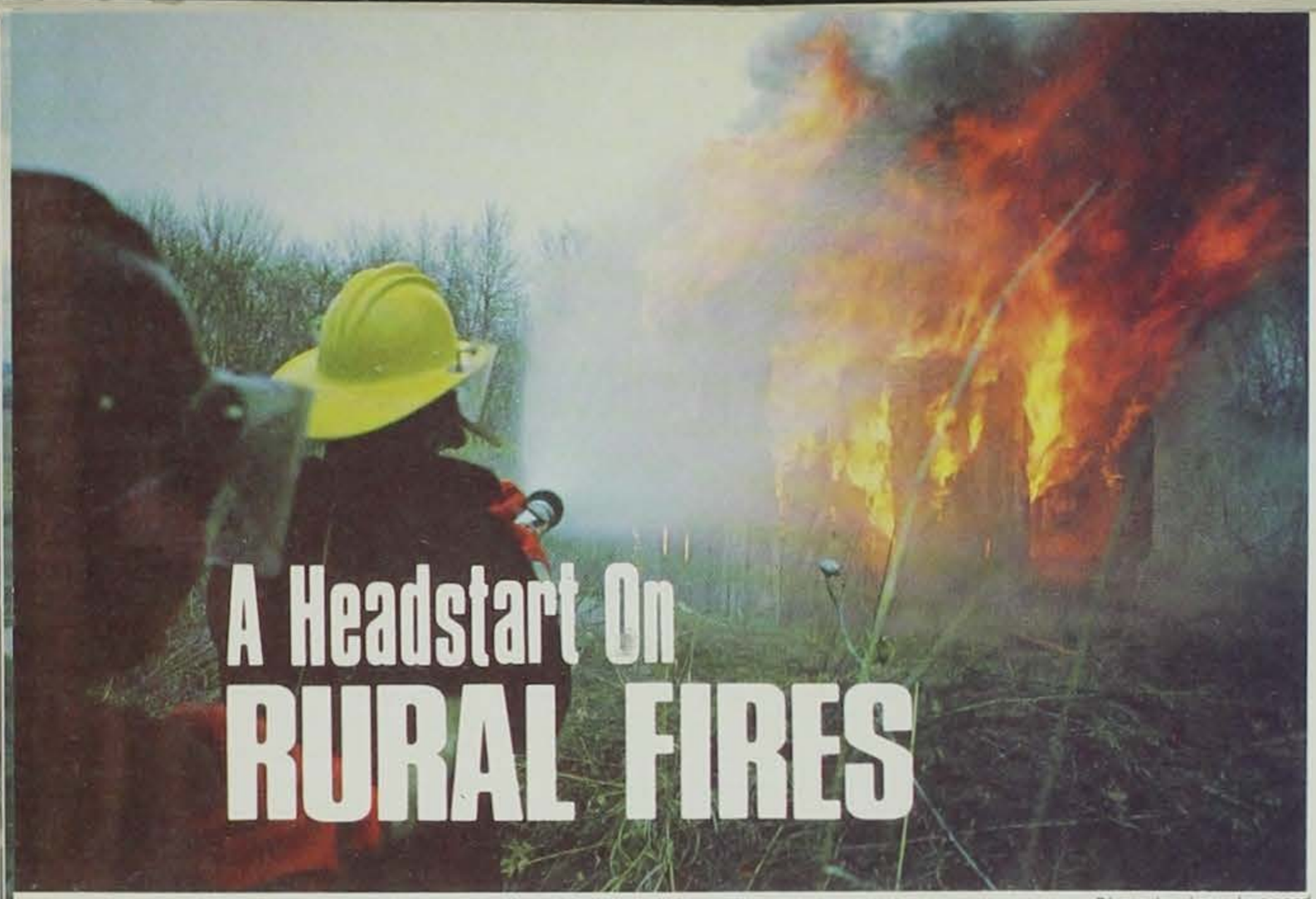
The 59 acre Wolden Recreational Area, operated by the Emmet County Conservation Board, provides excellent facilities for camping, picnicking, etc. This area is located between Ingham and High Lake.

The demand for hunting, fishing and other recreational activities is high and during the coming years it can be expected that these demands will increase. It is imperative that natural areas and fish and wildlife areas, like the Ingham-High-Cunningham-West Swan Areas, be acquired, developed and managed to provide for these demands.

If the Winnebago Indian of yester-year would return today to these areas I expect there might be a tear in his eye. However, with the work done to preserve and manage these areas and their wildlife, I hope that the tear would be small. □

Canada Goose nest (top) and with young (below).

Kenline Slough on West Swan.



A Headstart On RURAL FIRES

Photo by Jerry Leonard

by Roy Hatcher

PROTECTIVE FORESTER

One of the worst droughts of the century has focused attention on fire hazards in Iowa. During dry periods, timber and brush fires can quickly destroy thousands of acres of woodland resources and wildlife habitat. The Iowa Conservation Commission's forestry section has several programs that are helping to curb rural fire danger.

There are more than 900 fire departments in the state, most of which are in communities under 10,000 population. These towns must be equipped to provide rural fire protection.

The Commission administers a federal excess property program which provides military trucks and jeeps suitable for aiding the fighting of rough land fires to local fire companies. Several hundred of these vehicles in some 80 counties have been transformed into efficient rural fire fighters.

Few fire departments have the hand tools necessary for suppressing wild fires. So, foresters provide tool caches containing such instruments as back pack pumps, fire rakes, and fire swatters. More than 200 tool caches are now being successfully used around the state.

State foresters have also administered $117,000 of federal funds each of the last three years for rural fire protection. Through this program, rural fire companies receive basic firemanship training at their nearest area community college by fire service extension personnel. Also, radio communications equipment, protective clothing, breathing apparatus and funding for converting military vehicles into fire fighting equipment is cost shared on a matching basis with the communities. As a result of this program, fire fighting capabilities in Iowa's small towns and rural areas have been greatly enhanced.

Perhaps the most valuable of the forester's involvements is their fire prevention program. Coordinated through a fire prevention forester, the commission sends out posters, teachers kits and brochures containing the fire prevention message. Films and other educational materials are distributed by the district foresters. They also work with local fire departments providing materials and "Smokey the Bear" costumes. The Smokey/Junior Forest Ranger program has been very successful nationwide and Iowa is no exception. Preventing the loss of our remaining woodlands and wildlife habitat is a vital program in the minds of young Iowans. They are learning that prevention is the ultimate tool in fighting fires. □

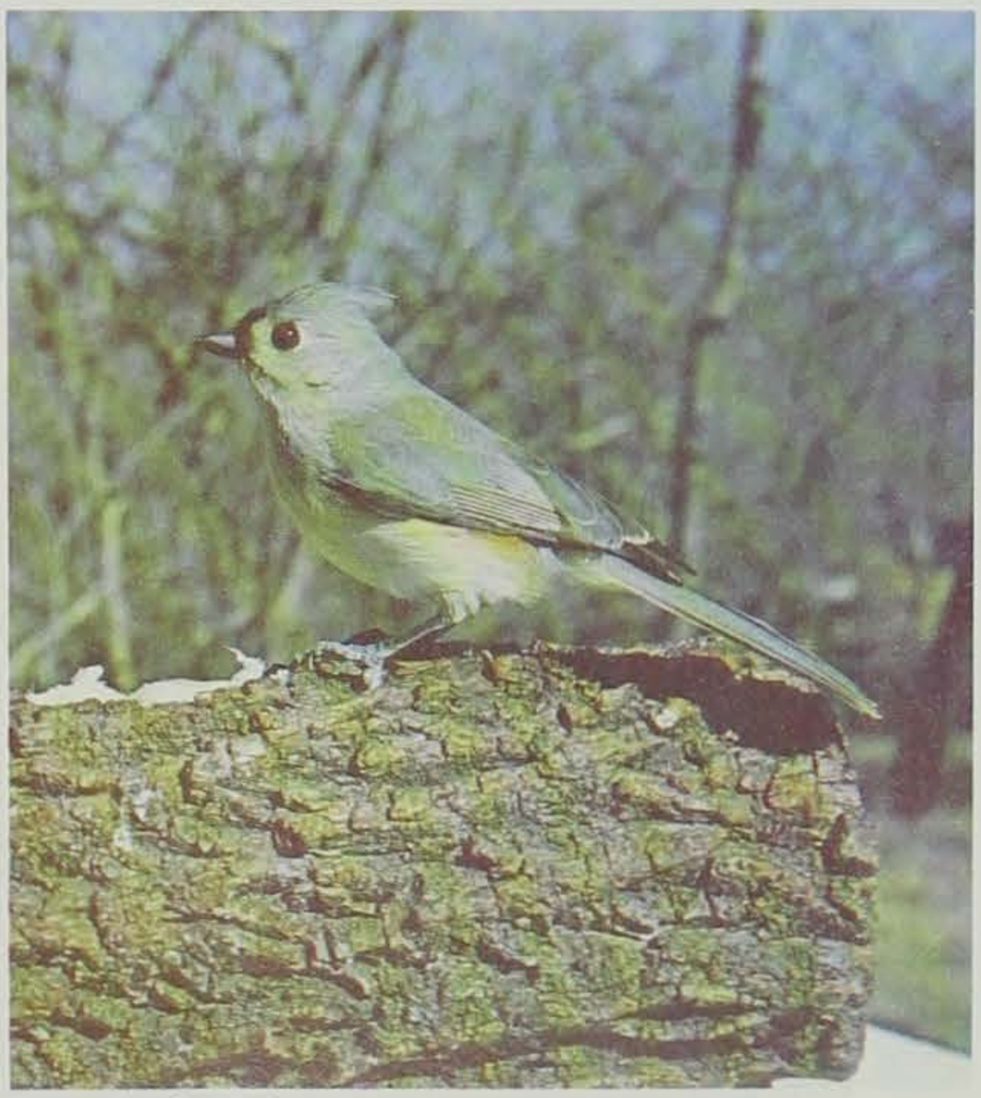


Photo by Ken Formanek

Tufted Titmouse.

CLASSROOM CORNER

by Robert Rye

ADMINISTRATOR, CONSERVATION EDUCATION CENTER

BIRDS are everywhere; perching in trees, feeding on lawns, resting on rooftops, out along roads. No area need be without regular visit of these interesting animals. Often during classes at the Center, birds are heard but not seen. Bird feeders provide a means to observe birds at the Education Center, where birds are often already comfortably feeding near man.

A simple bird feeder will give you the opportunity to closely observe birds and their behavior. Shy birds will be attracted by the activity of the bolder birds such as sparrows, chickadees or blue jays.

A word of caution: Birds can become dependent on feeders as a source of food, especially in winter when natural foods are scarce. Therefore, do not discontinue a feeding program during these periods.

A bird feeder project can be accomplished individually or as a group. It can be a construction activity in which a shop class or scout troop builds the feeders for use at school or home. A good brochure available from the Conservation Education Center is **Operation Tid-Bits** which describes various bird feeders that can be constructed.

HEADWATERS and DUCKS

ly Jim Ripple
LDLIFE BIOLOGIST

HERE IN IOWA our natural marshes occur along glacial melt lines. Many of these shallow marshes were filled long ago and are now some of our most productive farmland. hose that had natural outlets, were the basis for our present ainage pattern, and eventually formed our larger streams. ese marsh systems and their resulting drainage form our adwaters country. This headwaters country in addition to its cellent agricultural productivity is also the land of plenty for a v dabbler duck species. Here the mallard, blue-winged teal, ood duck and green-winged teal find all the comforts of home ring fall migrations; here they find water, animal and vegetable ods, sand for grit and gravel bars on which they loaf and preen.

Some of these waterfowl species naturally seek out these areas, ile others are driven to them by the heavy hunting pressure that present on most of our public hunting areas, especially during e openings.

If you are one of the individuals who has asked this question ound noon of the second day after opening, "Where have all the icks gone that were on the marsh yesterday and this morning? ave they been burned out, have they left Iowa for good?" Well, aybe some of them have left. But for the most part, they obably have broken into small groups and are on the creeks, nds and oxbows, within a relatively short distance from their ore safe night roosting areas in the marsh.

Jump shooting along these water courses can be very sporting and productive. It takes a combination of skills, walking, sneaking and peeking to fill a daily bag limit, as these waterfowl species with their large wing areas can jump, manuever and motate at high speeds.

While there are some things that become quite evident during this type of hunting, the factors of wind, sun and the time of day play an important role in the success. All of these factors have an effect on how and where you will find a certain species of ducks. After a time or two, as the creek becomes more familiar, your shooting average should go up considerably.

One of the main rules is that you do not overhunt an area. Once or twice a week is about right. Most of the shooting will be at medium to long range, either a rising or straightaway shot. You should use a fairly heavy shot, 4, 5's or maximum 6's.

It is usually better to hunt a stretch of creek alone, while a buddy who has driven your car to the next bridge, can be hunting the next mile. You finish your own mile, pick up the car and then go around to pick him up. As the stretches of creek become more familiar and you can anticipate duck activity, use your binoculars to "glass" a stretch. If there are ducks present, use the wind and any natural concealment to get close enough for some quick and challenging wing shooting.

The majority of this type of jump shooting occurs on private property. You must organize your hunt prior to the actual shooting days so that you and the landowner or landowner's are in agreement as to rules and regulations regarding fences, livestock, use of dog or any other things that have to be taken into consideration, so that the landowner's privileges are not abused.

No matter what type of hunting you do, you can become quite successful if you plan far enough in advance, learn to observe conditions of the natural world around you and are able to adjust to ever changing conditions. □

DESSA *(continued from Page 5)*

dessa was one of the few areas on the river flyway where such anagement was even possible. Summer drawdowns to expose ils, allowing germination and growth of aquatic or moist soil ants were the only solution. In recent years, this management with the help of lower summer river stages, has brought wetland values back to much of Odessa and the Refuge area.

As it exists today, the area of, in and around Odessa is many things to many people. For wildlife, it is still a habitat and a home. The north end of the old bottoms is a National Wildlife Refuge. The remainder is a State Wildlife Area. Odessa draws waterfowl and waterfowlers, the tradition is old and established. The entire area, for many species, is extremely important and has significance far beyond southeast Iowa. Canada geese concentrate in numbers greater than anywhere else in the state. Wetland values for the thousands of mallards, and other ducks, become more important each year as fewer other wetlands remain. Wood duck production is high. With improved habitat conditions, winter deer concentrations increase. Bald eagles and an occasional osprey find the area. Pileated woodpeckers hammer the quietness, and so do outboards, carrying the people who wish to enjoy the area.

Anglers use Odessa and catch bluegill, crappie, or other fish. Commercial fishermen pull out carp and buffalo for the market, and reduce competition for sport fishes. Campers spend time on the shoreline, or fish, or visit. Power boaters run the lake when water is high and wish to when water is low. Cabin owners on adjacent private land consider Odessa their second home, and have their own ideas of what Odessa should, or shouldn't be. Some visitors use Odessa's Toolsboro Access as a route to the Mississippi; others stalk deer on islands and some canoe Burris Ditch or quiet backwaters. In the fall, Odessa belongs largely to ducks, duck hunters, feather boats and retrievers.

The potential and real uses and users of Odessa place great demands on the land and water resource. But no area can be all things for all people. Odessa and Louisa Refuge have been reserved for their unique wildlife value and potential. To insure those values, we must use and enjoy the resources of this natural area only as stewards of its wildlife and the wildlife environment. In this way, future generations of people and wildlife can be assured of one small zone reminiscent of the Big River of centuries ago. □

Whether at school or home, a time needs to be set aside for ildren to observe, experiment and even photograph feeding rds.

It is necessary to emphasize that a good location for the eder will insure that birds find and use it. The feeder should e visible to the birds and to the observer. There should be rubs or trees nearby to provide access to the feeders and a eans of escape from predators.

Activity at feeders shows many bird characteristics of a bird eding on natural food. First, ask individuals to describe here they plan to put their bird feeders. Do their ideas come ose to where these animals normally feed?

Second, consider these questions: What foods do birds eat? o all birds prefer the same kind of food? Do the birds appear t the feeder at the same time each day? Are there birds who do ot come to your feeder?

Use several types of feed like large and small seeds, suet, opcorn or bread crumbs. Place feeders in different areas and heck at various times to get the answers to the questions.

An extremely popular bird with viewers of our feeders at the ducation Center is the cardinal. This bird is easily recognized y its color, crest, and bill. The bill is red, short, and stout or onical, adapted for seed cracking. The male is all red except or a black patch at the base of the bill. The female is yellowish-rown with a touch of red.

The cardinal is common in hedgerows, wood margins and uburbs. Bird study can be included in your winter program. o schedule your program write or call: *Conservation ducation Center, Route 1, Box 44, Guthrie Center Iowa 0115. Phone: 515-747-8383.*

FROM THE

Warden's diary

by Rex Emerson
LAW ENFORCEMENT SUPERVISOR

WHEN A YOUNG DUCK hunter was told that he was in trouble for shooting ducks before the legal shooting hours, he said, *"But according to my watch, it is time to shoot."* Very patiently I explained to the young man that before you go to the duck marsh you should check your watch to make sure it is correct. Also, I explained that I was an "old-timer" at this and when someone shoots twenty-five minutes early, as he had just done, I suspect he has turned his watch ahead so he can try to use that as an excuse.

With a smirk on his face he said, *"What is the definition of 'old-timer,' anyway?"*

I told him that I could remember when a penny post card cost only five cents, and that was an "old-timer." Then I explained that one of his constitutional rights was that he could remain silent, and I would recommend that he exercise that right. Also, if he wanted that defined, it meant to shut up and sit down while I made out the citation.

It is difficult to be nice to people at that time of the day. Maybe the fact that most of the people I come into contact with before daylight are law violators has something to do with it.

This particular day on the marsh was early in the duck season. The sky was clear when the sun came up over the marsh. The leaves on the trees looked like gold coins in the early morning light. Over on the bluff were some scarlet leaves mixed in with the gold colored ones. In a little open bay some duck hunters had set out a nice spread of decoys in the quiet water. Their flat bottomed boat, well camouflaged, was parked at one side of the open water. A black lab sat almost as motionless as a statue on the front deck. I wish someone would make a movie of such a beautiful morning. Then I wouldn't have to get up so darned early to see it.

Unless it is necessary, I don't like to bother the duck hunters during the first hour of the legal shooting time, because that usually is when most of the ducks are flying. That is when they have the best opportunity to bag a duck.

After pushing my boat into the vegetation along the bank, I got out my coffee thermos and some rolls, and found a comfortable place to sit by a small scrub tree. The unsought coot were swimming around, unafraid, in the open water. It was interesting to sit there and listen to the duck hunters on the marsh.

Every time I do this I think about retired Game Warden "Dutch" Lemke. He once said, *"If we could require all duck hunters to blow their duck calls every five minutes while they were on the marsh we would conserve more ducks than by anything else we could do."* A few duck hunters are really effective with a call. Most of the callers wonder why the crows circle around their area. This day was not going to be an exception. There were some pretty sour notes coming from some of the blinds.

After most of the ducks had left the marsh to feed in neighboring fields I went back to work. Some of the hunters were checked from my boat and others by sloshing through the water in my chest waders. The hunters were checked for hunting license, signed state and federal duck stamps, plug in the gun (so it wouldn't hold more than three shells) and for the number and kinds of ducks in their possession. If they were hunting from a boat they were also checked for life preservers, fire extinguishers and boat registration. It doesn't take as long as you might think because most of them expect to get checked and have everything ready to produce. Most duck hunters are really very nice people and it is a pleasure talking to them while doing all of this checking. Even when I find a stamp collector out there who didn't want to ruin his duck stamp by signing it in ink across the face as required by law, they are usually good-natured while I make out a court citation for the offense.

On this day there were three cases like that, one with an unsigned federal stamp and two with unsigned state duck stamps. The reason for the law is so they can't let someone else hunt using the same stamps the next day.

With very few ducks flying the hunters were beginning to relax a little. Most of the blind boats have a small gas stove in them. This was brought to mind by the smell of bacon and eggs frying. Most duck hunters' culinary arts seem to be limited to bacon and eggs and coffee. They usually haul a good supply of groceries out into the marsh, including paper plates. However, I have never seen where a duck hunter ever littered the land or the water.

About the middle of the day I saw a white boat out in the open water with two men, guns in hand, scanning the sky. You notice I didn't call them duck hunters. They were just hunters. Out there in the open in a white boat, they had to be wrong, so I went over to check them. They had the required licenses and stamps, and plugs in the guns. When I asked what kind of luck they had had today, one young fellow said, *"Not too good, but I got one pintail."* He proudly produced the bird. I had to ruin his whole day by telling him it was not a pintail. In fact, it wasn't a duck at all, but a grebe, and very much protected by law.

When the shooting hours were over for the day there were a few hunters who stayed for several minutes, still scanning the sky. If the ducks had cooperated I am sure they would have shot late. They looked a bit surprised when they walked past me on the dike a short distance from where they had just been hunting.

So goes the day of a game warden on the duck marsh. Some people compain that we don't catch all the violators, but we try. We really do!

Photos by R. Runge

THE BEAVER CREEK STUDY

Beaver Creek as it enters the Des Moines River.

The Des Moines Chapter of the Izaak Walton League in association with Drake University has been completing an eight month study of Beaver Creek as part of our "Save Our Streams" program. This program has included the use of a graduate student in Limnology, Mr. John Miller of the Drake University Biology Department.

Although this is perhaps a different type of "Save Our Streams" project than one ordinarily considers a part of the Izaak Walton League's S.O.S. Program, we felt that studies of this type in a semi-scientific aspect should be considered. We also feel that working, private citizens in the Izaak Walton League could work well in conjunction with their local Universities and some of their post-graduate students in understanding some of the more scientific aspects of water pollution.

Beaver Creek is a small creek which drains agricultural land from the west-central part of the State of Iowa and encompasses a good section of agricultural black soil. There are at least five small towns along its banks, many of which empty primary and secondary treated sewage into the stream. There are no tertiary sewage treatment plants along the path of the stream. The creek runs approximately 75 miles in length, has a total drainage area of 372 square miles, and empties into the Des Moines River near the northern boundary of Des Moines, Iowa. Grimes Creek, a tributary, joins Beaver Creek approximately 5 miles above the city limits of Des Moines. This stream is about 7 miles in length and drains from a small city, Grimes, Iowa. We felt that studying the area around Beaver Creek and the insertion of this small creek into Beaver Creek would give us an idea about the effects of a small stream on a larger one.

The studies were made at weekly intervals from December through July. During the entire study we kept track of dissolved oxygen, pH, the most probable number of coliforms and enteric coliforms. The water temperature and various chemical tests including nitrate and nitrite nitgrogen, ortho and meta phosphate, specific conductance, and turbidity were performed at weekly intervals during the period from February to May. Most tests were performed using the Hach Chemical Company's methods.

Grimes Creek.

Four stations were used during this study. Station #1 was located just before the juncture of Beaver Creek with the Des Moines River. Station #2 was located on Grimes Creek about 100 yards upstream from its juncture with Beaver Creek. Station #3 was located just upstream of the juncture of Grimes and Beaver Creek. The last station, #4, was located about one-fourth mile downstream of the juncture of Beaver and Grimes Creeks, far enough downstream to allow for adequate mixing of the two waters.

During the course of our survey we found that many of the various water quality parameters we looked at were similar in both Beaver and Grimes Creek. Therefore Grimes Creek had no major effect on the water quality of Beaver Creek.

The dissolved oxygen concentration was quite good, approaching 100% saturation at all times, varying mostly with changes in temperature. It was noted that the pH was slightly high but remained stable between 8 and 9. Turbidity of the stream increased as the stream flowed downstream. Other trends showed that rainfall caused an increase in both turbidity and coliform bacteria. It was felt that part of the reason for this was that the rain washed soil and other particulate matter into the stream, thus causing the increase in turbidity and in the coliform bacteria, as bacteria often adhere to soil particles. Associated with this rainfall was a decrease in specific conductance of the water. This was apparently due to a dilutional effect because of the increased volume of water flowing in the stream at the time. The nitrate nitrogen remained within the 0 - 12 mg/l range which is within normal limits for a stream in this type of agricultural area. It was also noted that there was an increase in the phosphates and nitrate nitrogen in March which may, in part, be due to the spring thaw as well as the time of year when some of our farming population begin to work the fields.

All in all, it was felt that the stream situation at Beaver Creek generally compared with the water quality of agricultural streams throughout the state of Iowa. We feel that more work needs to be done to study the effects intensive agriculture, agricultural products, and chemicals have on water quality both in free-flowing and standing bodies of water.

While studies like this will not lead to great scientific discoveries, one point has been made. Private citizens can work with their Universities in analyzing the chemistries and functions of the water in their neighborhood and thereby increase the knowledge of the general public about water quality. □

Photo by Ken Formanek